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The
FLORIDA BUGGIST

Official Organ of The Florida Entomological Society, Gainesville,
Florida.

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Fumigation of citrus trees may be revived in Florida. The Roessler and Hasslacher Chemical Company is conducting extensive demonstrations at Windermere and elsewhere in Florida. Improved methods of generating and discharging the gas under the tents by means of a machine greatly simplify and shorten the operations. Particulars may be obtained by addressing Mr. J. B. Dales, Pine Tree Inn, Windermere, Fla.

THE CALIFORNIA DELPHASTUS

The whitefly-eating lady-beetle (*Delphastus catalinae*) continues to multiply in several Florida groves at a most gratifying rate. In the grove near Bradentown they are present in countless thousands and arrangements have been perfected for shipping these beetles from there to different parts of the state. It is desired to introduce them into all citrus communities. It is thought that enough are now in sight to supply a colony to any grower who desires one. Anyone interested should apply to his county agent or to the Department of Entomology of the Experiment Station. A small charge, sufficient only to defray the cost of collecting and packing, is made for these.—J. R. W.

AN OUTBREAK OF THE COTTON STAINER ON CITRUS

Citrus and avocado growers in some of the southern counties of the state where, in order to escape the boll weevil, cotton has been raised this season, are having trouble with the Cotton Stainer (*Dysdercus saturellus* (H. S.)). This bug is a pyrrhoid with deep red body and black wings and is sometimes called the "red bug." This is a common name for the cotton stainer in the West Indies and would be appropriate and desirable for Florida were it not preoccupied by those pestiferous mites, the larvae of *Trobidium*, with which we are all too well acquainted.

On citrus the cotton stainer does about the same type of dam-

age as the pumpkin bug (*Nezara viridula*), i. e., it punctures the rind and the fruit soon drops from the tree and decays. The punctures, however, are smaller and entirely invisible to the naked eye. There is not the hardening and discoloration of the surrounding tissue characteristic of pumpkin bug injury. The bugs feed mostly on the oil cells but frequently penetrate to the pulp. They are much more restless than the pumpkin bugs and do not remain feeding in one spot for hours as the latter frequently do. They show the same preference for thin-skinned varieties of citrus, tangerines being their first choice. They are not as apt to feed all night as are the pumpkin bugs, but usually collect in colonies on the interior of the tree. Even in the day time they are distinctly gregarious, collecting in colonies on the leaves and fruit both on the tree and the ground.

The present outbreak has undoubtedly been brought on by the planting of cotton in citrus communities. No outbreak has been recorded in communities where no cotton was planted. The adults can fly considerable distances. The writer recently saw one heavily infested grove that was three-fourths of a mile from the nearest cotton. There were adults only in this grove. Another grove directly across a road from a cotton patch was heavily infested with both adults and young. Scattering half grown nymphs were seen as far as 800 feet from the cotton. The vast majority of these had crawled from the cotton field. Indeed, scores were observed in the act of crawling across. They travelled in a nearly straight line for the citrus as if they smelled it, altho the wind was from another direction. However, one colony of very young nymphs was observed that must have hatched from eggs laid on fallen oranges. The nymphs were but a few days old and were bunched in a compact colony after the fashion of newly hatched nymphs of these bugs. It is incredible that the colony could have crawled *en mass* such a distance without becoming scattered. A search was made for Spanish cockle-burr on which they might have bred but none was found. Evidently, they can occasionally breed on citrus, altho Hubbard states that they do not do so.

Evidently the growing of cotton in citrus communities in the southern counties should be abandoned. Altho the bugs are rather sporadic in their appearance, being abundant some years and scarce others, the practice involves too great a risk. Hubbard, in "Orange Insects", warns against the practice. Another statement that he makes, however, is erroneous, or at least only

partly true. He states that chickens will not eat the bugs. The writer saw chickens gorging themselves on the bugs, both nymphs and adults. The chickens had saved a portion of a cotton field nearest a house from destruction. It is easy to make a mistake like this in regard to the food of chickens. Fowls are often rank "standpatters", refusing absolutely to even taste a food to which they are unaccustomed. Probably it would frequently happen that a handful of cotton stainers thrown to fowls that had never eaten this species of bug would at first be refused. The writer has had a similar experience with pumpkin bugs which are usually eaten by hens. Indeed he once owned a flock of hens which persistently refused to touch perfectly good Kaffir corn.

The cotton stainer is a southern species and usually does severe damage only in the southern part of the state. Indeed Barber, in his list of the "Hemiptera of Florida", does not record it from north of Lake City and St. Augustine. The absence of any reports from the northern counties, however, is probably due to the absence of entomologists rather than the absence of the bugs, as it is recorded as a pest of cotton in South Carolina, Georgia, and Alabama. It has been recorded from many places in Florida not in Barber's list (see Sellards in Rep. of Fla. Ag. Exp. Station, 1905). Apparently in the compilation of this list, as in some others of the series of lists published by the American Museum of Natural History, the literature of economic entomology has been largely ignored.

Two other species are listed by Barber as having been taken in the extreme southern part of the state. One of them, and at least two other species of the genus, are severe pests of cotton in the West Indies. One of these, *D. delanneyi* Seth., has "been rendered negligible" in St. Vincent by the destruction of its wild hosts, the silk cotton tree, the wild okra (*Malachra capitata*), and the John Bull tree. Perhaps the same happy result could be achieved in Florida by the destruction of the Spanish cockle-burr (*Urena lobata*) on which it largely breeds in the absence of cotton.

The name "cotton stainer" is derived from the effect of these bugs on cotton lint. They feed on the seed and collect on the bolls in the fields, staining the lint a pinkish or reddish color, greatly lowering its value. This staining is said (West Indian Bulletin XVI No. 3, p. 236) to be due not directly to the bugs but to fungi and bacteria which follow.—J. R. W.